

# Advanced System/7000N

## Product Overview

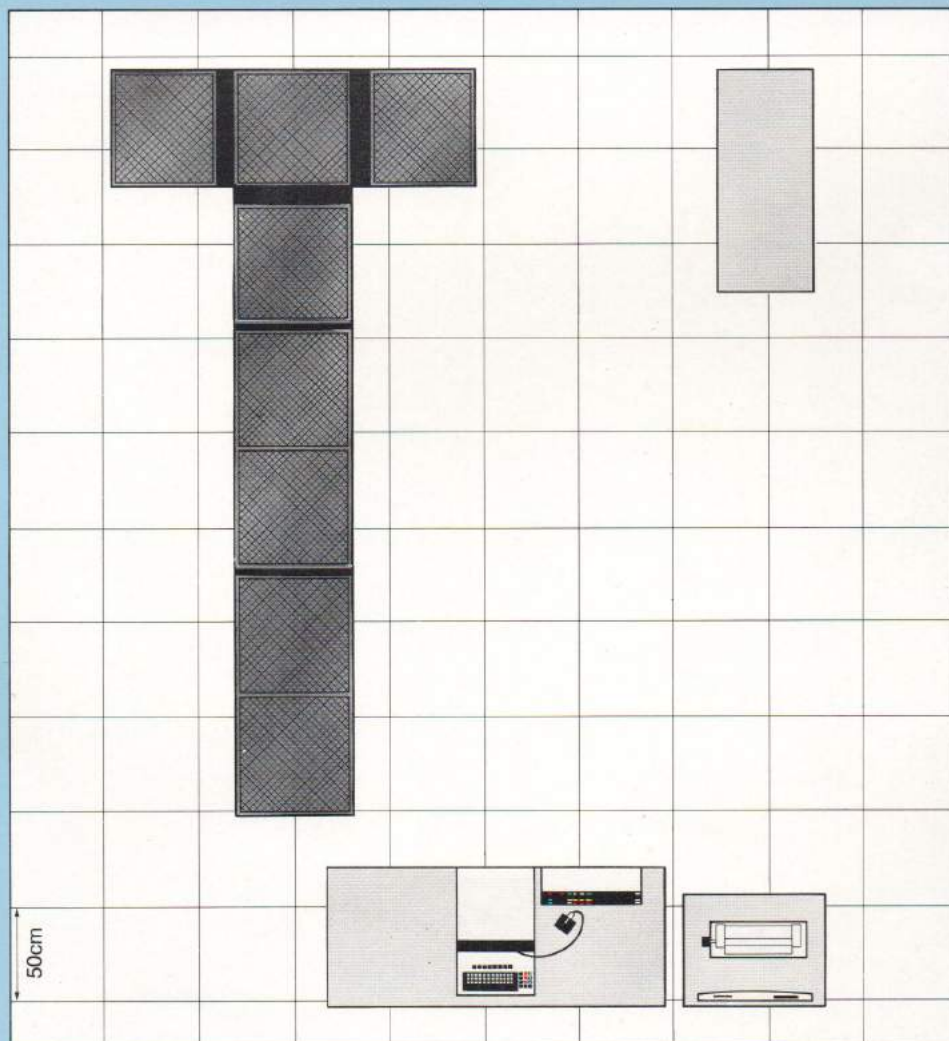
The Advanced System/7000N is a highly reliable central processor complex that offers twice the performance of the IBM 3031. Fully compatible with IBM operating systems, application programs and I/O devices, the AS/7000N can be upgraded to the AS/7000, providing a level of performance greater than that of the IBM 3032, and thence to the AS/7000 DPC, a system more powerful than the IBM 3033. All Advanced Systems are air-cooled and upgrading takes place on site, with the minimum of disruption. Thus a major investment in people, programming and training can be safeguarded throughout an extended period of four-fold growth of computing power.



## Highlights

The AS/7000N offers:

- Functional compatibility with IBM 360/370/303X software
- Support for MVS/SP and VM/SP
- 8 channels driven by an I/O processor
- Support for all IBM 360/370/303X channel compatible devices
- Data Streaming (Optional)
- High reliability and availability
- Advanced component technology
- Memory sizes up to 8 megabytes in 1 megabyte increments
- Field upgradability to AS/7000 and AS/7000 DPC



#### Advanced I/O Capability

The two byte multiplexor and six block multiplexor channels provided with the system are each capable of supporting up to 8 control units and 256 I/O devices. Channels are controlled by an independent Input/Output Processor (IOP) which is able to execute channel commands and access main memory independently of the Central Processor, thus increasing system throughput. The block multiplexor channels transfer data at speeds up to 1.86 megabytes per second. The AS/7000N provides support for the IBM 3880/3380 Disk Subsystem via the Speed Matching Buffer or in Data Streaming Mode (Optional feature).

#### Main Memory

Two megabytes of 100ns 16K N-MOS RAM main memory are standard, but may be increased in one megabyte increments to a total of 8 megabytes. Memory access is four-way interleaved and a 16K cache or buffer memory further reduces effective access time.

#### Reloadable Control Storage

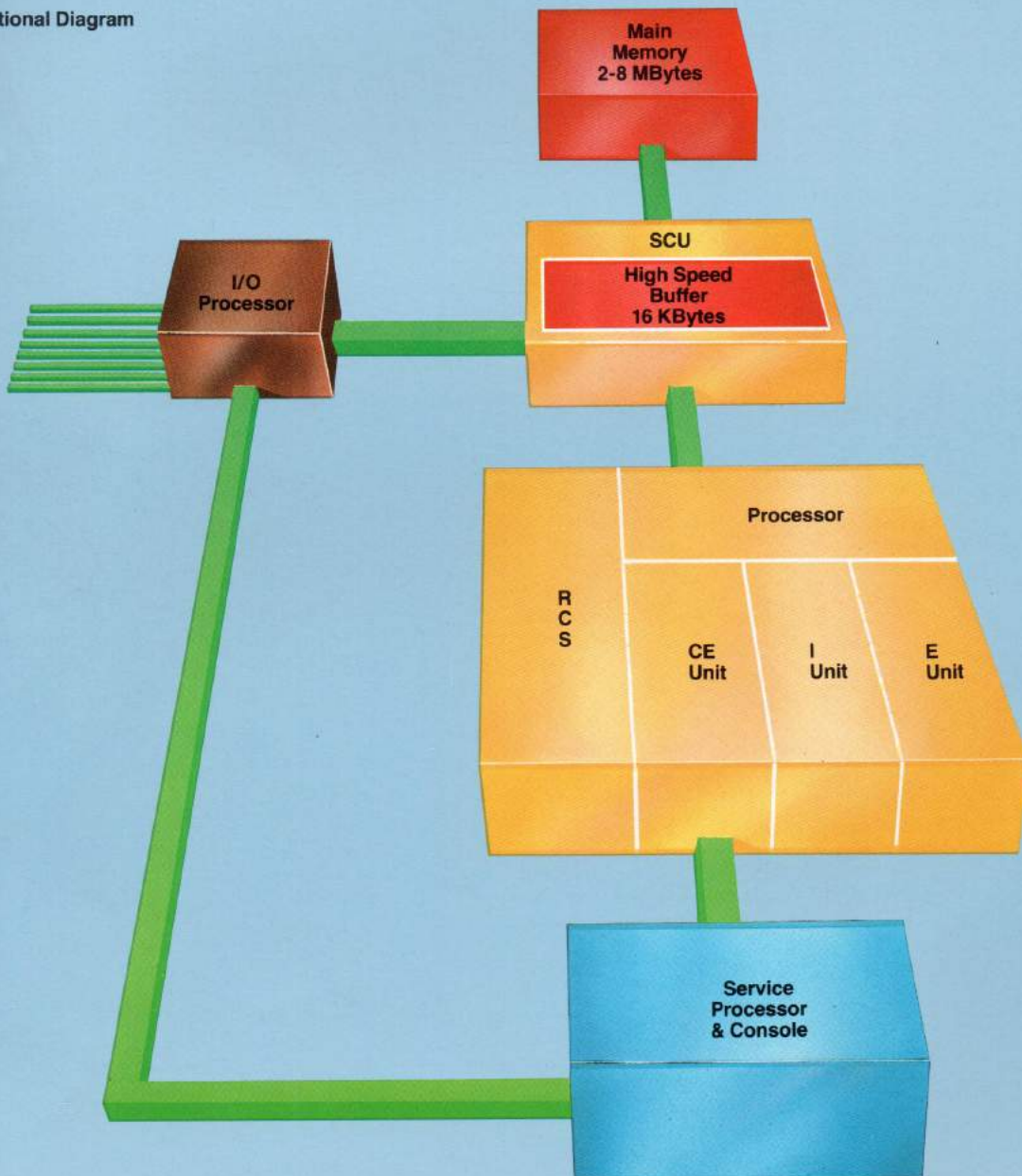
The central processor, I/O processor and service processor all operate under the control of independent microprograms. These are loaded into separate areas of Reloadable Control Storage (RCS) from system diskettes. The Central Processor is equipped with 6K of 99 bit words of RCS. In addition to the standard microprograms used to control system operation and perform diagnostic

functions, microprograms are available to provide specific assistance to the VM/370 operating system (VMA), and to the MVS operating system in conjunction with S/370 Extended Facility and MVS System Extensions. The use of these microprograms can significantly reduce the overhead attributable to the operating system and hence increase system throughput.

#### Service Processor and Console

An independent Service Processor is provided for operator control and Field Engineer diagnostic functions. A Visual Display Unit, with light pen and key-

Functional Diagram





board, and a 180cps matrix printer are connected to the service processor, and may be used either to control machine operations or interface to the operating system.

A second service processor is available as an option.

#### **Environmental Considerations.**

The entire complex is air-cooled. A Power Distribution Unit is provided with the system which provides a measure of protection from fluctuations in the electrical supply and requires no additional motor-generator equipment. The PDU also provides Emergency Power Off and Power sequencing facilities for other devices in the computer room.

#### **Reliability and Availability**

During the manufacturing process, all components and sub-assemblies are individually tested, while semi-conductor devices are subjected to an additional 'aging' process. This ensures that the machine contains no marginal components that would otherwise fail during the first few months of use. Long term reliability is ensured by the use of components of the highest quality coupled with automated manufacturing procedures to eliminate error.

Extensive facilities are provided to minimise any malfunction and to detect potential failures before they become critical to system operation.

These include:

- Error checking and correction for main memory (ECC)
- Main memory reconfiguration
- Parity checking on buffer and storage key operations

- Channel, I/O operation and instruction retry
- Expanded error logout
- Stage tracer
- Extended diagnostic routines.

#### **Field Engineering**

National provides 24-hour 7-day per week field engineering support for both hardware and software, as well as systems engineering and consultancy services.

#### **Software Compatibility**

The AS/7000N runs all of the IBM System 360/370/303X operating systems, including MVS, VM/370 and VS/1, as well as providing support for MVS/SP and VM/SP. It also supports program products available from IBM and other suppliers.



# Advanced System/7000N

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## Advanced System Specifications

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<b>Processor</b>	<b>AS/7000N</b>
Cycle Time	72 nanoseconds
Memory Buffer	16 kilobytes
Reloadable Control Storage	6K x 99 bits (equivalent to 48 kilobytes)

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<b>Memory</b>	
Size	2-8 megabytes
Increment	1 megabyte
Technology	16K N-MOS
Access Width	8 bytes
Error Correction	Single bit error
Error Detection	Double bit error
Interleaving level	4-way

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<b>Channels</b>	
IOPs (standard)	1
Byte Multiplexor	2 standard
Block Multiplexor	6 standard
Data Transfer rate Byte Multiplexor	100 kb/sec
Data Transfer rate Block Multiplexor	1.86 mb/sec
Aggregate Channel Rate	11 mb/sec

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<b>Standard Features</b>	
Direct Control	Yes
Channel to Channel Adaptor	Yes
Console and Light Pen	Yes
Console Printer	180cps
Microcode	System/370 Extended Facility Virtual Machine Assist

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<b>Optional Features</b>	
Alternate Service Processor & Console	
Data Streaming	
Two Byte Interface	

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<b>Physical Parameters (approx.)</b>	
(4 megabyte system)	
Floor Space	7m <sup>2</sup>
Heat Dissipation	18,000 kcal/hr
Power Consumption	25.5KVA
Weight	3,551 kg

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